What is claimed is:

1. A flow measurement system that measures the volume of a fluid, comprising:

a control system;

a turbine meter, comprising:

a meter flow path;

at least one turbine rotor in said meter flow path that rotates when fluid passes through said meter flow path; and

a pulser that sends a pulser signal in relation to the rotation of said at least one turbine rotor to said control system;

a flow switch, comprising:

a flow switch flow path; and

a sensor that communicates a flow switch signal to said control system when fluid is passing through said flow switch flow path;

said flow switch flow path fluidly coupled to said meter flow path such that fluid that passes through said meter flow path also passes through said flow switch flow path;

said control system receives said pulser signal and calculates a volume of the fluid passing through said meter flow path based on said pulser signal, wherein said control system ignores said pulser signals in the calculation of the volume of the fluid passing through said meter flow path when said control system is not receiving said flow switch signal.

2. The system of claim 1, wherein said flow switch is located upstream of said turbine meter.

3. The system of claim 1, wherein said flow switch is located downstream of said turbine meter.

4. The system of claim 1, wherein said flow switch further comprises:

a housing; and

a primary fuel flow path positioned within said housing comprising:

a piston; and

a spring holding said piston in a normally closed position.

5. The system of claim 4, wherein said sensor is adapted to sense movement of said piston and report movement of said piston to said control system by communicating said flow switch signal to said control system.

6. The system of claim 5, wherein said piston further comprises a position sensible element.

7. The system of claim 6, wherein said position sensible element comprises a magnet and said sensor comprises a Hall-Effect sensor.

8. The system of claim 7, wherein said sensor comprises an element selected from the group consisting of: a magnetic reed switch arrangement, a capacitive sensor, an ultrasonic sensor, and a Hall-Effect sensor.

9. The system of claim 4, further comprising a relief valve positioned within said housing.

10. The system of claim 9, wherein said relief valve is associated with said piston.

11. The system of claim 1, wherein said flow switch is comprised of:

a valve body;

a poppet head;

an o-ring;

a relief valve wherein said relief valve is coupled between said valve body and said o-ring and wherein said o-ring is coupled between said relief valve and said poppet head;

a washer; and

a spring coupled between said poppet head and said washer;

said poppet head adapted to compress said spring towards said washer when a force is applied to the side of said poppet head coupled to said o-ring.

12. The system of claim 1, wherein said flow switch further comprises:
a housing;
a primary fuel flow path positioned within said housing comprising:
a primary piston; and
a primary spring holding said primary piston in a normally closed position;
a secondary fuel flow path positioned within said housing, fluidly connected to said primary fuel flow path and passing around said primary piston, said secondary fuel flow path comprising:
a secondary piston; and
a secondary spring holding said secondary piston in a normally closed position, said secondary spring requiring less force to compress than said primary spring.

13. The system of claim 12, wherein said sensor is adapted to sense movement of said secondary piston and report movement of said secondary piston to said control system.

14. The system of claim 13, wherein said secondary piston further comprises a position sensible element.

15. The system of claim 14, wherein said position sensible element comprises a magnet and said sensor comprises a Hall-Effect sensor.

16. The system of claim 15, wherein said sensor comprises an element selected from the group consisting of: a magnetic reed switch arrangement, a capacitive sensor, an ultrasonic sensor, and a Hall-Effect sensor.

17. The system of claim 12, further comprising a relief valve positioned within said housing.

18. The system of claim 17, wherein said relief valve is associated with said primary piston.

19. The system of claim 1, further comprising a temperature sensor fluidly coupled to said a flow switch flow path and coupled to said control system wherein said temperature sensor senses the temperature of the fuel passing through said meter path and communicates the temperature to said control system.

20. The system of claim 19, wherein said control system adjusts the calculation of said volume of the fluid passing through said meter flow path based on the temperature of the fluid.

21. The system of claim 1, further comprising a pressure sensor fluidly coupled to said a flow switch flow path and coupled to said control system wherein said pressure sensor senses the pressure in the flow switch flow path and communicates the temperature to said control system.

22. The system of claim 21, wherein said control system adjusts the calculation of said volume of the fluid passing through said meter flow path based on the pressure of the fluid.

23. The system of claim 1, further comprising a viscosity sensor fluidly coupled to said a flow switch flow path and coupled to said control system wherein said viscosity sensor measures the viscosity of the fluid passing through said meter flow path and communicates the viscosity to said control system.

24. The system of claim 23, wherein said control system adjusts the calculation of said volume of the fluid passing through said meter flow path based on the viscosity of the fluid.

25. The system of claim 1, further comprising an octane sensor fluidly coupled to said a flow switch flow path and coupled to said control system wherein said octane sensor to determine the octane of the fluid passing through said meter flow path and communicates the octane to said control system.

26. The system of claim 25, wherein said control system determines if the meter flow path is contaminated based on the octane of the fluid.

27. A fuel dispenser that measures the volume of fuel dispensed into a vehicle, comprising:

a control system;

a fuel conduit that is fluidly coupled to fuel;

a valve coupled to said control system and coupled to said fuel conduit wherein said control system controls the opening and closing of said valve to control the flow of fuel;

a turbine meter coupled to said fuel conduit, comprising:

a meter flow path;

at least one turbine rotor in said flow path that rotates when fuel passes through said flow path; and

a pulser that sends a pulser signal in relation to the rotation of said at least one turbine rotor to said control system;

a flow switch coupled to said fuel conduit, comprising:

a flow switch flow path; and

a sensor that sends a flow switch signal to said control system when fuel is passing through said flow switch flow path;

said flow switch flow path fluidly coupled to said meter flow path such that fuel that passes through said meter flow path also passes through said flow switch flow path;

said control system receives said pulser signal and calculates a volume of the fuel passing through said meter flow path based on said pulser signal, wherein said control system ignores said pulser signals in the calculation of the volume of the fuel passing through said meter flow path when said control system is not receiving said flow switch signal.

28. The fuel dispenser of claim 27, wherein said flow switch is located upstream of said turbine meter.

29. The fuel dispenser of claim 27, wherein said flow switch is located downstream of said turbine meter.

30. The fuel dispenser of claim 27, wherein said flow switch further comprises:

a housing; and

a primary fuel flow path positioned within said housing comprising:

a piston; and

a spring holding said piston in a normally closed position.

31. The fuel dispenser of claim 30, wherein said sensor is adapted to sense movement of said piston and report movement of said piston to said control system by communicating said flow switch signal to said control system.

32. The fuel dispenser of claim 31, wherein said piston further comprises a position sensible element.

33. The fuel dispenser of claim 32, wherein said position sensible element comprises a magnet and said sensor comprises a Hall-Effect sensor.

34. The fuel dispenser of claim 33, wherein said sensor comprises an element selected from the group consisting of: a magnetic reed switch arrangement, a capacitive sensor, an ultrasonic sensor, and a Hall-Effect sensor.

35. The fuel dispenser of claim 30, further comprising a relief valve positioned within said housing.

36. The fuel dispenser of claim 35, wherein said relief valve is associated with said piston.

37. The fuel dispenser of claim 27, wherein said flow switch is comprised of:

a valve body;

a poppet head;

an o-ring;

a relief valve wherein said relief valve is coupled between said valve body and said o-ring and wherein said o-ring is coupled between said relief valve and said poppet head;

a washer; and

a spring coupled between said poppet head and said washer;

said poppet head adapted to compress said spring towards said washer when a force is applied to the side of said poppet head coupled to said o-ring.

38. The fuel dispenser of claim 27, wherein said flow switch further comprises:

a housing;

a primary fuel flow path positioned within said housing comprising:

a primary piston; and

a primary spring holding said primary piston in a normally closed position;

a secondary fuel flow path positioned within said housing, fluidly connected to said primary fuel flow path and passing around said primary piston, said secondary fuel flow path comprising:

a secondary piston; and

a secondary spring holding said secondary piston in a normally closed position, said secondary spring requiring less force to compress than said primary spring.

39. The fuel dispenser of claim 38, wherein said sensor is adapted to sense movement of said secondary piston and report movement of said secondary piston to said control system.

40. The fuel dispenser of claim 39, wherein said secondary piston further comprises a position sensible element.

41. The fuel dispenser of claim 40, wherein said position sensible element comprises a magnet and said sensor comprises a Hall-Effect sensor.

42. The fuel dispenser of claim 41, wherein said sensor comprises an element selected from the group consisting of: a magnetic reed switch arrangement, a capacitive sensor, an ultrasonic sensor, and a Hall-Effect sensor.

43. The fuel dispenser of claim 38, further comprising a relief valve positioned within said housing.

44. The fuel dispenser of claim 43, wherein said relief valve is associated with said primary piston.

45. The fuel dispenser of claim 27, further comprising a temperature sensor fluidly coupled to said a flow switch flow path and coupled to said control system wherein said temperature sensor senses the temperature of the fuel passing through said meter path and communicates the temperature to said control system.

46. The fuel dispenser of claim 45, wherein said control system adjusts the calculation of said volume of the fuel passing through said meter flow path based on the temperature of the fuel.

47. The fuel dispenser of claim 27, further comprising a pressure sensor fluidly coupled to said a flow switch flow path and coupled to said control

system wherein said pressure sensor senses the pressure in the flow switch flow path and communicates the temperature to said control system.

48. The fuel dispenser of claim 27, wherein said control system adjusts the calculation of said volume of the fuel passing through said meter flow path based on the pressure of the fuel.

49. The fuel dispenser of claim 27, further comprising a viscosity sensor fluidly coupled to said a flow switch flow path and coupled to said control system wherein said viscosity sensor measures the viscosity of the fuel passing through said meter flow path and communicates the viscosity to said control system.

50. The fuel dispenser of claim 49, wherein said control system adjusts the calculation of said volume of the fuel passing through said meter flow path based on the viscosity of the fuel.

51. The fuel dispenser of claim 27, further comprising an octane sensor fluidly coupled to said a flow switch flow path and coupled to said control system wherein said octane sensor to determine the octane of the fuel passing through said meter flow path and communicates the octane to said control system.

52. The fuel dispenser of claim 51, wherein said control system determines if the meter flow path is contaminated based on the octane of the fuel.

53. The fuel dispenser of claim 27, wherein said control system displays the volume of the fuel on a display.

54. The fuel dispenser of claim 27, wherein said control system calculates a price to be charged for the fuel and wherein said control system displays the price on a price display.

55. A method of determining the volume of a fluid, comprising the steps of:

passing the fluid through across at least one turbine rotor in a turbine meter causing said at least one turbine rotor to rotate;

generating a pulser signal in response to the rotation of said turbine rotor;

passing the fluid through a flow switch;

generating a flow switch signal only in response to fluid passing through said flow switch; and

using said pulser signal to calculate the volume of the fluid based on the rate of said pulser signal if said flow switch signal is generated in said step of generating a flow switch signal.

56. The method of claim 55, wherein said step of generating a flow switch signal comprises sensing the movement of a piston in a flow switch housing that moves in response to fluid passing through said flow switch housing.

57. The method of claim 56, further comprising:

sensing movement of said piston; and

reporting movement of said piston to a control system by communicating said flow switch signal to said control system.

58. The method of claim 57, wherein said step of sensing said piston comprises sensing a position sensible element on said piston.

59. The method of claim 56, further comprising releasing a relief valve in said flow switch housing if said flow switch becomes over-pressurized.

60. The method of claim 55, further comprising sensing the temperature of the fluid and using the temperature of the fluid to adjust the calculation of the volume of the fluid.

61. The method of claim 55, further comprising sensing the pressure inside said flow switch housing and using the pressure inside said flow switch housing to adjust the calculation the volume of the fluid.

62. The method of claim 55, further comprising sensing the viscosity of the fluid and using the viscosity of the fluid to adjust the calculation of the volume of the fluid.

63. The method of claim 55, further comprising sensing the octane of the fluid and using the octane of the fluid to determine if any contamination is pressure in said turbine meter.

64. A method of determining the volume of fuel dispensed into a vehicle, comprising the steps of:

passing fuel across at least one turbine rotor in a turbine meter causing said at least one turbine rotor to rotate;

generating a pulser signal in response to the rotation of said turbine rotor;

passing the fuel through a flow switch;

generating a flow switch signal only in response to fuel passing through said flow switch;

using said pulser signal to calculate the volume of the fuel based on the rate of said pulser signal if said flow switch signal is generated in said step of generating a flow switch signal; and

displaying the volume of the fuel dispensed on a volume display.

65. The method of claim 64, wherein said step of generating a flow switch signal comprises sensing the movement of a piston in a flow switch housing that moves in response to fluid passing through said flow switch housing.

66. The method of claim 65, further comprising:

sensing movement of said piston; and

reporting movement of said piston to a control system by communicating said flow switch signal to said control system.

67. The method of claim 66, wherein said step of sensing said piston comprises sensing a position sensible element on said piston.

68. The method of claim 65, further comprising releasing a relief valve in said flow switch housing if said flow switch becomes over-pressurized.

69. The method of claim 64, further comprising sensing the temperature of the fluid and using the temperature of the fluid to adjust the calculation of the volume of the fluid.

70. The method of claim 64, further comprising sensing the pressure inside said flow switch housing and using the pressure inside said flow switch housing to adjust the calculation the volume of the fluid.

71. The method of claim 64, further comprising sensing the viscosity of the fluid and using the viscosity of the fluid to adjust the calculation of the volume of the fluid.

72. The method of claim 64, further comprising sensing the octane of the fluid and using the octane of the fluid to determine if any contamination is pressure in said turbine meter.

73. A method of determining the volume of fuel dispensed into a vehicle, comprising the steps of:

initiating the dispensing of fuel;

opening partially a two-stage valve adapted to regulate fuel flow into a flow rate selected from the group consisting of: no flow, slow flow and high flow;

measuring the flow rate of the fuel;

generating pulser signals indicative of the flow rate of the fuel;

compressing a secondary spring in a secondary piston in a dual piston valve to open a secondary fuel path;

detecting movement of a sensible element in said dual piston valve when said secondary piston moves;

communicating the movement of said secondary piston;

using said pulser signal to calculate the volume of the fuel based on the rate of said pulser signal;

dispensing the fuel in a slow flow state;

opening fully said two-stage valve;

compressing a primary spring in a primary piston in said dual piston valve to open a primary fuel path;

dispensing the fuel in a high flow state;

closing partially said two-stage valve when the volume of the fuel approaches a pre-paid amount;

decompressing said primary spring to close same primary fuel path;

closing said two-stage valve;

decompressing said secondary spring to close said secondary fuel path;

communicating a movement of said sensible element after said step of decompressing; and

ignoring said pulser signal after said steps of decompressing and communicating a movement of said sensible element to said control system after said step of decompressing.